

Bilateral Mandibular Canine with two Canals in One Root: A Case Report

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ABSTRACT

Background: Mandibular canine usually contains one root with a single root canal. The occurrence of two roots and two canals is a rare entity ranging from 1 to 5%. The anatomy of root canal morphology plays a decisive role in determining the conditions under which endodontic treatment can be performed effectively. Successful endodontic treatment comprises proper diagnosis, meticulous cleaning and shaping, followed by three dimensional obturation. Failure to do so may lead to postoperative diseases, pain and further complications. This article reports successful management of a mandibular canine with two roots and two canals.

Keywords: Bilateral Mandibular Canine, two canals, dentistry.

INTRODUCTION

The aim of endodontic treatment is to eliminate infection from the root canal system and prevent reinfection.¹ Successful endodontic treatment requires proper diagnosis, cleaning and shaping and three dimensional obturation. Inability to do so may result in postoperative diseases, pain and further complexities.² Variations in canal morphology such as extra canals, apical ramifications, apical deltas, or lateral canals are commonly encountered and their incidence and significance have been well documented.^{3,4} Inadequate knowledge regarding variations of root canal system may be a major cause of the failure of root canal system. The clinician should know about any anatomical variations which can change the visualization for root canal treatment.

Normally, mandibular canine has one root with a single root canal.⁵ The anatomical variations related with permanent mandibular canines have been

documented by several investigators. Pineda and Kuttler⁶, Green⁷ and Vertucci⁸ announced that the incidence of mandibular canines with one root and two root canals is around 15%. In the meantime, the occurrence of mandibular canines having two roots and two root canals was accounted for to be up to 5%.^{9,10} This paper reports successful endodontic management of a mandibular canine having two root canals merging at apical third.

CASE REPORT

A 27-year-old female patient reported to Department of Conservative Dentistry and Endodontics at Dr. Harvansh Singh Judge of Dental Sciences and Hospital, Panjab University, Chandigarh with a chief complaint of pain in lower right anterior region from last 2 weeks. She gave history of root canal treatment of mandibular right canine (43). Clinical examination revealed tender on percussion mandibular right canine (43). Diagnostic radiograph revealed mandibular canine with two

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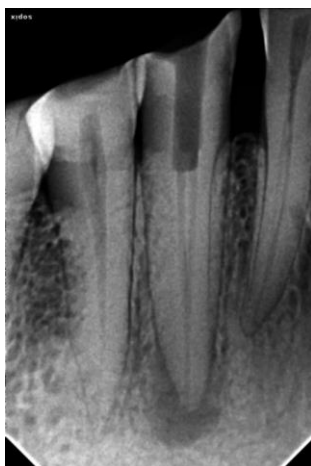


Fig 1: Intraoral periapical showing mandibular right canine with two canals and periapical radiolucency



Fig 2: Intraoral periapical radiograph of mandibular left canine

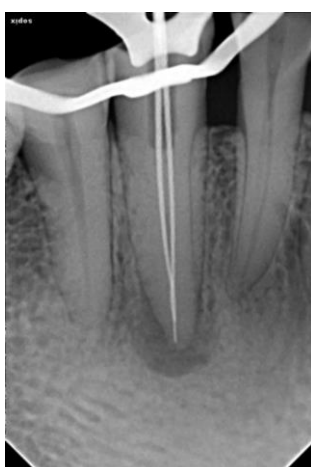


Fig 3: Working length radiograph

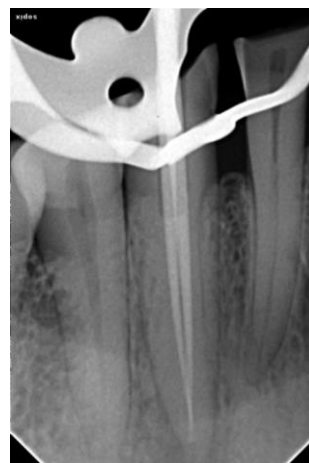


Fig 4: Master cone radiograph

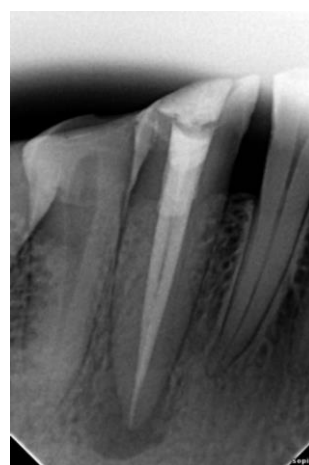


Fig 5: Postobturation radiograph

canals merging at apical third with periapical radiolucency and access was opened (Fig 1). Thermal and electric pulp tests showed delayed response. Patient was diagnosed with irreversible pulpitis with apical periodontitis. Radiograph of mandibular left canine (33) also revealed two roots canals in a single root (Fig 2).

Local anesthesia was administered and rubber dam was placed. Access was modified. The buccal and lingual orifices were identified and negotiated with no 8 and 10 k files. Working length was established radiographically for both canals (Fig 3). Chemo mechanical preparation was performed using ProTaper File system (Dentsply-Maillefer, Ballaigues, Switzerland). A 3% sodium hypochlorite used as irrigant at every change of instrument. The apical preparation was done until F1 file size in both the canals and master cone radiograph was taken (Fig 4) and then the canals were obturated with

corresponding ProTaper cones. Postobturation radiograph was recorded (Fig 5). The access preparation was thereafter restored with composite resin.

DISCUSSION

The root canal morphology can be complex and should be thoroughly understood prior to the endodontic treatment. Cautious examination of the initial radiograph is critical. It permits the distinguishing proof of numerous roots, root canals, and anatomical variations. Additional root canals if not detected are major reason for failure of endodontic treatment.¹¹

Mandibular canines usually have a single root with one canal; however, variation in the number of roots and root canals has been reported. Our case report demonstrates mandibular canine with two root canals merging in apical third in a single root. Here bifurcation of root canal occurred at floor or cervical 1/3 which is in accordance with previous study which states bifurcation at cervical and middle third has been shown to occur in 43% of situation at these sites.¹²

Early discovery of a mandibular canine with two roots, two root canals positively impacts the achievement rate of endodontic treatment, as it permits the utilization of particular indicative instruments and the setting of individualized techniques in view of the anatomical distinction of the tooth. In this manner, it is essential to deliberately assess the diagnostic radiographs; it is useful to know about the significance of location of a sudden misfortune in the progression of the root canal lumen or a radiolucent groove in the lateral part of the root, which are findings that hint to the presence of more than one canal.

Victorino et al¹³ describes a case report of a patient with bilateral mandibular canine with two roots and two canals. Our case also demonstrates bilateral mandibular canines with two root canals in a single root that is evident in radiograph.

There was mention a case of a mandibular canine that had two roots and three root canals.¹⁴ There is likewise proof of even three root canals with just two apices.¹⁵ Considering the realities from various investigations it tends not out of the ordinary that

the nearness of root channel variations in mandibular canine is an exceptional finding, but the clinician should always be aware about anatomical diversities before endodontically treating any tooth.

CONCLUSION

The anatomical variations identified with mandibular canine must be recognized when this tooth is involved in endodontic diagnosis or treatment planning, furthermore, good access opening identifies all canals opening.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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